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GREELEY AND HANSEN

ENGINEERS

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(301) 817-3700 • FAX (301) 817-3735

February 22, 1999

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Northern VA. Region
Dept. of Env. Quality

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Ms. Alison L. Bermingham
Enforcement/Compliance Specialist
Department of Environment Quality
Northern Virginia Regional Office
13901 Crown Court
Woodbridge, Virginia 22193-1453

Subject: City of Alexandria, VA 0087068
Post-Construction Monitoring Plan

Dear Mr. Bermingham:

Please find enclosed three copies of subject plan which incorporates DEQ comments of February 18, 1999.

If you have any questions or require additional information, please advise.

It was our understanding that these arrangements would be sufficiently timely to satisfy our permit requirements.

Yours Very Truly

Greeley and Hansen

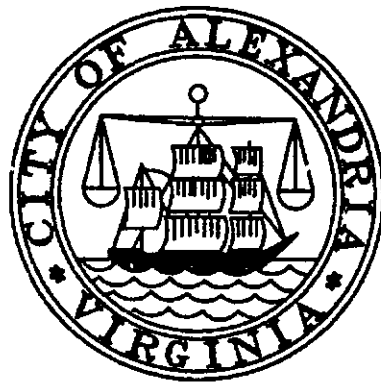
Sham Cole for

Ronald E. Bizzarri

cc: Mr. Carlos Garay (VDEQ w/emit)
Mr. Warren M. Bell
SLC

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES

**CSO Long Term Control Plan Summary
and
Post-Construction Monitoring**



January 1999

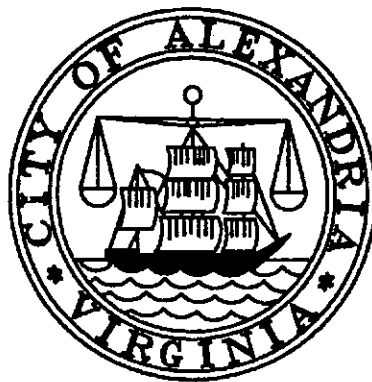
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DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES

**CSO Long Term Control Plan Summary
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January 1999

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8905 Presidential Parkway, Suite 230
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CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES

**CSO Long Term Control Plan Summary
and
Post-Construction Monitoring .**

Greeley and Hansen
January 1999

1.1 BACKGROUND

Originally, much of the City of Alexandria, Virginia (City) was served by combined sewers. The City has separated most of the original system and today approximately 500 acres of the older southeastern section of the City continues to be served by combined sewers. The combined sewer area is shown on Figure 1 and combined sewer overflows (CSOs) can occur at three locations as follows:

- At the foot of Pendleton Street at Oronoco Bay
- At the foot of Royal Street at Hunting Creek
- Under Duke Street at Hooffs Run

In 1990 the City initiated a study of its combined sewer system (CSS). Based on the studies, the Virginia Department of Environmental Quality (DEQ) issued the City a VPDES permit for the CSS effective April 3, 1995. The DEQ found that the City's CSO discharges do not impair beneficial use of the receiving waters. The permit was issued after public notice produced no comments and requires the City to meet conditions as follows:

- Meet the technology based requirements of the United States Environmental Protection Agency's (USEPA) Combined Sewer Overflow Control Policy (April 1994). These requirements comprise EPA's "Nine Minimum Controls" to implement best management practices (BMPs) and minor structural improvements on combined sewer systems.
- Conduct in-stream monitoring for Hooffs Run to analyze for copper, zinc and hardness.
- Not later than January 1, 1997, submit a report documenting implementation of the Nine Minimum Controls as applicable to the City's CSS.

- Report annually on overflow occurrences employing the CSS hydraulic model together with a summary of CSS trunk sewer inspection and maintenance.
- Develop and submit to DEQ a post-construction water quality monitoring program.

Additionally, the permit requires development of a long-term control plan.

1.2 PLAN STATUS AND REMAINING ACTIVITIES

Current status of the requirements included in the City's VPDES permit are summarized as follows:

- The City has implemented the Nine Minimum Controls as applicable to the CSS and submitted the report which documents the implementation.
- DEQ approved a monitoring plan for Hooffs Run on September 15, 1997 and the City initiated monitoring. The first samples were obtained in December 1997, but the City encountered difficulties with procedures related to sample preparation and had to obtain additional equipment to properly prepare and filter samples at the site. Since then, sampling has been hampered by lack of rain. This activity will continue to completion.
- The City reports annually on overflows and inspection and maintenance of the CSS.
- In February 1998 the City held a public meeting to discuss long term control plan alternatives. Information compiled for this meeting is attached as Appendix No. 1. DEQ has accepted the City's studies and modeling results that accompanied the permit application. According to the permit fact sheet, the City's CSO discharges do not preclude attainment of existing water quality standards and, therefore, the long term control plan presented for public review and comment comprised continued implementation of the Nine Minimum Controls along with some potential enhancements. There were no significant public comments to the proposed long term control plan and responsiveness documentation is summarized in Appendix No. 2.

At this point, the monitoring, studies and public involvement conducted by the City and the findings and public review process made by DEQ in issuing the permit constitute development of a long term control plan for the City's CSS. Also, the City has moved forward and implemented the various Nine Minimum Controls which comprise the fundamental element of the long term control plan. Additionally, the several public meetings held to review what has become the City's long term CSO control plan and the

public review conducted as part of the VPDES permit issuance have already provided opportunities for public comment on the long term CSO control plan.

The City's long term CSO control plan comprises the following:

- Continued implementation of the Nine Minimum Controls (per 1997 documentation report).
- Provide to DEQ annual reports on overflows and inspection and maintenance of the CSS.
- Develop and submit to DEQ a post-construction monitoring program for the CSS.

Work remaining on the long term control plan comprises development and submission to DEQ of a post-construction water quality monitoring program. In accordance with the VPDES permit, DEQ will use the post-construction monitoring results to verify compliance with water quality standards and the protection of receiving stream beneficial uses, as well as to ascertain the effectiveness of the CSO controls.

1.3 PROPOSED MONITORING PLAN

There are two basic considerations to be addressed by post-construction monitoring as follows:

- First, the City's VPDES permit expires April 3, 2000 and information for the reissuance application must be received by DEQ not later than October 3, 1999. In this regard, the City should proceed to obtain current information on CSO quantities and characteristics for the permit reissuance application. This should include data from 1999 spring rain period.
- Second, development of a framework for monitoring under the reissued permit should be initiated and submitted to DEQ with the permit reissuance application.

A proposed plan for accomplishing the first consideration related to the long term control plan post-construction monitoring is summarized as follows:

- Install a continuous flow monitor and wet weather event sampling station on the Royal Street CSO outfall. This location was not included in the original monitoring and will provide information on discharges to Hunting Creek.

- Install a flow monitor on the discharge at Duke Street. This will provide flow information that can be used in conjunction with the Hooffs Run sampling information (which comprises sampling above and below the CSO discharge). The City will also use this monitor for continual data acquisition. This monitor is in the process of being installed and is expected to be operational by March 1999.

Monitoring these locations will provide information for three of the four potential CSO discharges and the information will be correlated with the CSS hydraulic and receiving water models to compare current information to the previously evaluated conditions. This will allow assessment of the CSO impacts on receiving waters using existing instream data, from the STORET program and other local monitoring programs (e.g. MWCOG data).

This approach will also identify whether or not additional instream monitoring should be conducted and if so, this can be made a part of the monitoring for the initial phase of the reissued permit.

Proposed monitoring for the Royal Street CSO outfall is summarized as follows:

- Initiate monitoring to obtain data during spring 1999 rain season.
- Try to obtain data from at least 8 wet weather events.
- Sample the first three hours of a wet weather event. This matches the original monitoring and average overflow duration identified in the annual reports for 1995, 1996 and 1997.

A sampling plan and protocol is summarized in Table 1. Substances selected are those of concern based on findings from the VPDES permit fact sheet. Information obtained and an assessment will be submitted to DEQ when completed and with the application for permit reissuance.

FIGURE 1

CONTROL OF SOLID AND FLOATABLE MATERIALS FROM CSO's

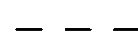
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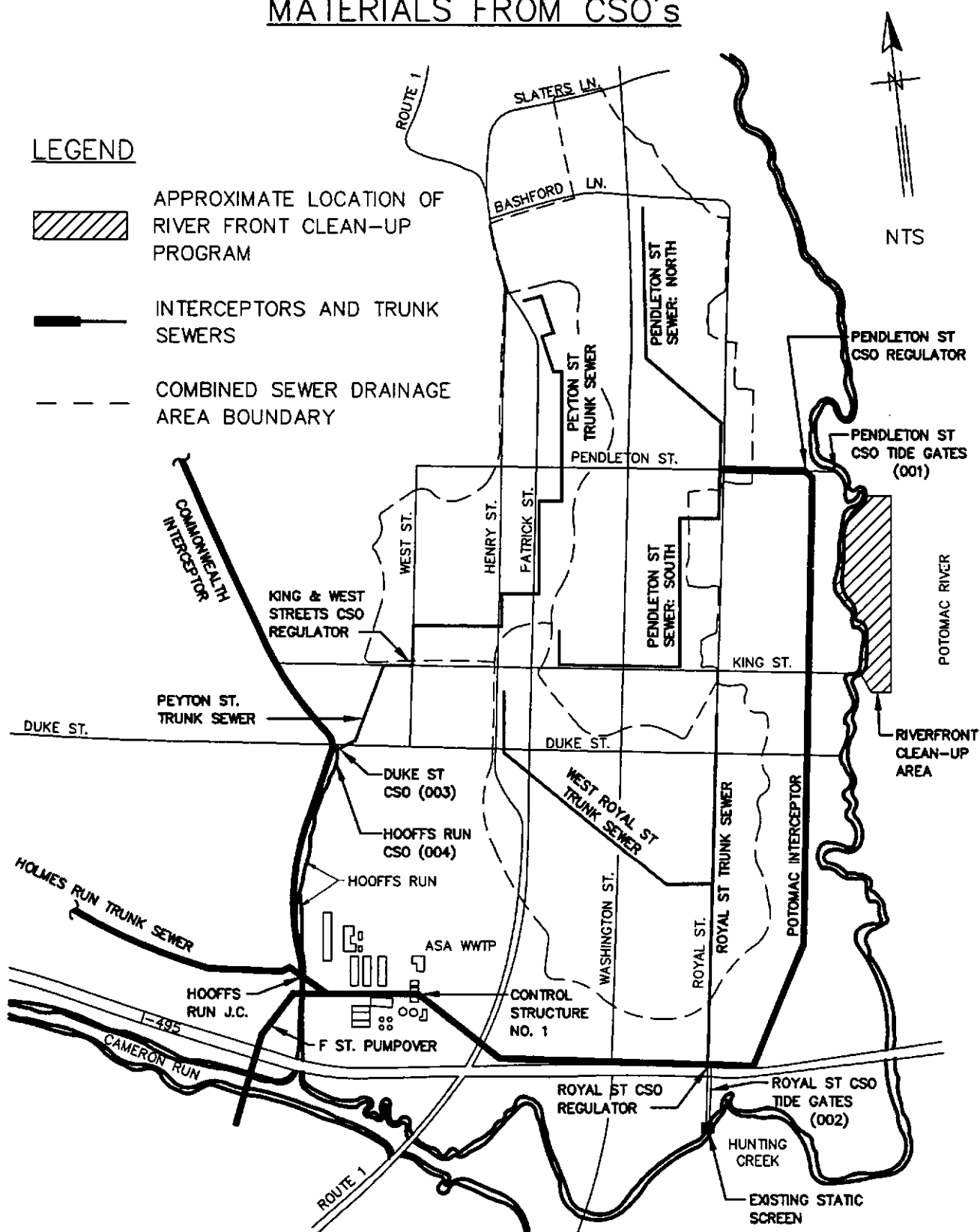
APPROXIMATE LOCATION OF
RIVER FRONT CLEAN-UP
PROGRAM



INTERCEPTORS AND TRUNK
SEWERS



COMBINED SEWER DRAINAGE
AREA BOUNDARY



CITY OF ALEXANDRIA
TRANSPORTATION AND ENVIRONMENTAL SERVICES
CSO LONG TERM CONTROL PLAN
JANUARY 1999

GREELEY AND HANSEN

TABLE 1

Royal Street CSO Post-Construction Monitoring

CSO Discharge Analyses and ProtocolA. ANALYSES

<u>Characteristic or Substance to be Analyzed</u>	<u>Form</u>	<u>Minimum Detection Limit (ug/l)⁽¹⁾</u>	<u>Remarks</u>
<u>I. Conventional Characteristics</u>			
CBOD5	N/A	(2)	mg/l
Suspended solids	"	(2)	mg/l
Total phosphorous	"	(2)	mg/l
Ammonia	"	(2)	NH ₃ -N (mg/l)
Hardness	"	(2)	as CaCO ₃ (mg/l)
pH	"	(2)	Std. units
Fecal Coliform	"	(2)	#/100 ml
<u>II. Metals</u>			
Antimony	(3)		
Arsenic	"	10.0	
Arsenic III	"	10.0	
Barium	"		
Cadmium	"	1.0	
Chromium III	"	10.0	
Chromium IV	"	10.0	
Copper	"	1.0	
Iron	"		
Lead	"	5.0	
Manganese	"		
Mercury	"	0.2	
Nickel	"	4.0	
Selenium	"	5.0	
Silver	"	0.2	
Zinc	"	10.0	

⁽¹⁾ Where a value is listed it refers to the limit under an approved U.S. EPA analytical method.

⁽²⁾ Per established VPDES permit methods and procedures.

⁽³⁾ Dissolved and total recoverable.

TABLE 1, continued

B. PROTOCOL

1. Characteristics and substances selected for analyses will be periodically reviewed as data are accumulated. Additions, deletions or other modifications may be made based on the data review.
2. Individual samples will be analyzed to the extent practicable to obtain time related discharge information. It may not be possible to sample and/or analyze for every characteristic or substance for every event. The overall objective is to obtain reliable and sufficient information.
3. Manual grab samples may be obtained from time to time for purposes of characterizing and/or verifying information obtained from automatic sampling.
4. Samples considered to be contaminated or otherwise unfit for analyses will not be analyzed. Test results suspected of being unreliable will not be reported and the circumstances explained.

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES

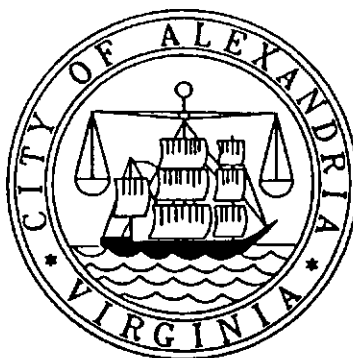
CSO Long Term Control Plan Summary
and
Post-Construction Monitoring

APPENDIX NO. 1

Public Meeting Information Document

Greeley and Hansen
January 1999

City of Alexandria, Virginia
Transportation and Environmental Services



**INFORMATION DOCUMENT FOR
PUBLIC INFORMATION MEETING ON
CITY OF ALEXANDRIA
COMBINED SEWER OVERFLOW PROGRAM**

**Public Meeting: February 10, 1998 at 7:30 pm
Room 2000, City Hall**

January, 1998

Greeley and Hansen
8905 Presidential Parkway
Upper Marlboro, MD 20772

City of Alexandria, Virginia
Transportation and Environmental Services

***INFORMATION DOCUMENT FOR PUBLIC INFORMATION MEETING ON
CITY OF ALEXANDRIA COMBINED SEWER OVERFLOW PROGRAM***

Greeley and Hansen
January 1998

BACKGROUND

Many older cities in the United States are served by combined sewers. A combined sewer carries both sewage and runoff from storms. Modern practice is to build separate sewers for sewage and storm water. Approximately 500 acres of the older southeastern section of the City of Alexandria are served by combined sewers. The combined sewer area is shown on Figure 1, on page 3.

In a combined sewer system during dry weather conditions, the sewage from homes and businesses is taken to the sewage treatment plant operated by the Alexandria Sanitation Authority. There, the wastewater receives treatment to remove pollutants before being discharged to tidal water of the Potomac River at Hunting Creek.

When the capacity of a combined sewer is exceeded during storms, the excess flow which is a mixture of sewage and stormwater runoff is discharged to the Potomac River, Hunting Creek and Hoofs Run, which are tributaries of the river. The excess flow is called combined sewer overflow (CSO). Overflows can occur at the following three locations in the City:

- At the foot of Pendelton Street at Oronoco Bay
- At the foot of Royal Street at Hunting Creek
- Under Duke Street at Hooffs Run

The City has a Virginia Pollutant Discharge Elimination System (VPDES) permit, issued by the Virginia Department of Environmental Quality (DEQ), for the combined sewer system and has implemented a number of programs for controlling the combined sewer discharges. These programs have proven effective in minimizing any water quality impacts from the discharges.

PUBLIC MEETING

As part of long term planning, the City is also conducting studies to evaluate alternatives that may improve existing control programs. A meeting is being held to give the public an opportunity to review background information and provide comments on the alternatives being considered. The public meeting is scheduled for 7:30 pm, Tuesday, February 10, 1998 at Room 2000 in City Hall.

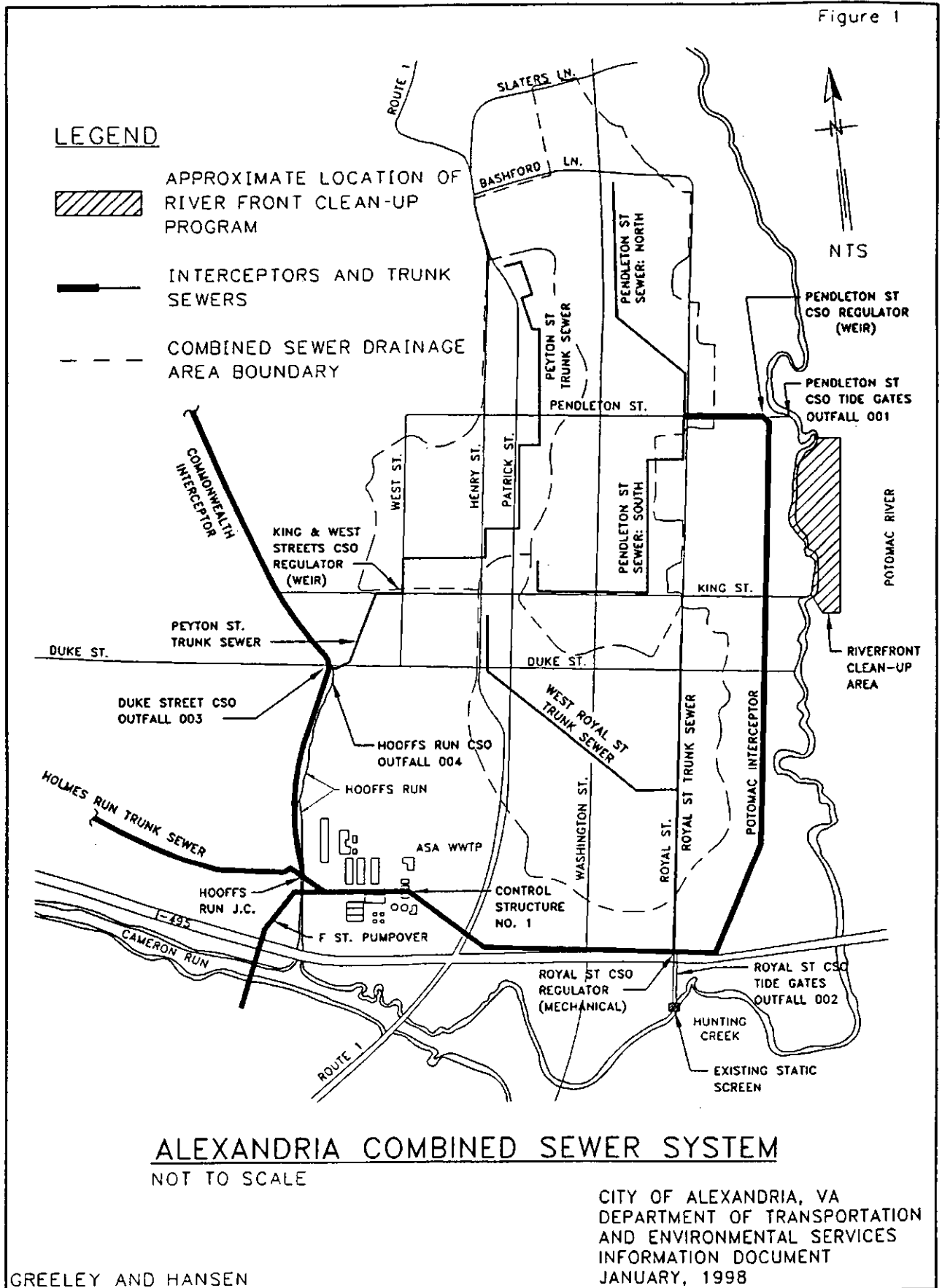
In order to give the public an opportunity to review relevant information prior to the public meeting, the City has placed this Information Document on reserve at three libraries in the City. This Information Document includes the following items which may be consulted for further information on the City's CSO Program:

- Program Review Document No. 4 - Development of Preliminary Alternatives and Selection of Final Alternatives
This document is part of the text of a report that will be prepared on the studies and activities related to developing a control program for the City's combined sewer system. In addition to providing a background description of the CSO Program, the document describes preliminary alternatives considered to address CSOs and final alternatives to be implemented after obtaining public comment and approval of regulatory agencies.
- CSO System Annual Report No. 1 for 1995
This is the first of a series of annual reports required by the City's VPDES Permit. The report summarizes the CSO overflows predicted for the year and describes the City's sewer inspection and maintenance program for the year.
- CSO System Annual Report No. 2 for 1996
This is the second annual report, similar to that noted above for 1995. However, this report also includes a listing of the Nine Minimum Control Measures which have been implemented by the City. Implementation of the Nine Minimum Controls complies with the USEPA's Combined Sewer Overflow Policy.
- VPDES Permit and Fact Sheet
This is a copy of the City's VPDES permit, and the permit Fact Sheet, which is a summary of pertinent information regarding the permit. Both the permit and Fact Sheet address the City's CSO's.

FURTHER INFORMATION

Further information is available by calling Ronald E. Bizzarri at (301) 817-3700.

Figure 1



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GREELEY AND HANSEN

**City of Alexandria
Transportation and Environmental Services**

PROGRAM REVIEW DOCUMENT NO. 4

**Chapter VI of Alexandria CSO Study Final Report
"Development of Preliminary Alternatives and
Selection of Final Alternatives"**

October 1995

**Greeley and Hansen
in association with
Limno-Tech, Inc.
and
Occoquan Watershed Monitoring Laboratory**

City of Alexandria
Transportation and Environmental Services

PROGRAM REVIEW DOCUMENT NO. 4

Preface

This preliminary program review document comprises Chapter VI of the Alexandria CSO Study Final Report. The title of Chapter VI is "Development of Preliminary Alternatives and Selection of Final Alternatives". The outline of the entire Final Report is expected to be as follows:

Proposed Outline for Final Report

<u>Chapter</u>	<u>Description</u>
I.	Summary and Findings
II.	Introduction
III.	Basic Data
IV.	Flow Monitoring and Sampling Program
V.	Assessment of Existing Combined Sewer Overflow Impacts
VI.	Development of Preliminary Alternatives and Selection of Final Alternatives
VII.	Analysis of Final Alternatives
VIII.	Selected Plan
IX.	Implementation
X.	Public Participation Program
XI.	References

The chapter which is enclosed in a box is contained in this Program Review Document. Subsequent chapters will also be provided as Program Review Documents for review as the respective tasks are completed.

City of Alexandria
Transportation and Environmental Services

PROGRAM REVIEW DOCUMENT NO. 4
Chapter VI of CSO Study Final Report
"Development of Preliminary Alternatives and
Selection of Final Alternatives"

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- C. FINAL ALTERNATIVES DEVELOPMENT
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- VI-2 CSO Control Technologies Screening Summary

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City of Alexandria
Transportation and Environmental Services

PROGRAM REVIEW DOCUMENT NO. 4
Chapter VI of CSO Study Final Report
"Development of Preliminary Alternatives and
Selection of Final Alternatives"

A. INTRODUCTION

1. Background

The City of Alexandria, Virginia initiated a Combined Sewer Overflow (CSO) Study for its Combined Sewer System (CSS) in August 1990. An in-depth program for the characterization, monitoring, and modeling of the CSS was then developed and carried out. Based on the findings of these efforts, an assessment of the impact of CSO discharges on the receiving waters was performed using water quality models. The procedures and results of each task carried out are documented in detail in the previously issued Chapters III through V of this report¹.

Based on the results of the study, the Virginia Department of Environmental Quality (DEQ) has found that the City's current CSO discharges to the Potomac River and Hunting Creek Embayment, which are shown in Figure VI-1, do not preclude attainment of existing water quality standards. These results indicate that the City's existing nine minimum control program, which is outlined in Table VI-1, is highly effective and adequately reduces CSO pollutant loads. The City, therefore, will use the "Demonstration" approach for the Pendleton Street and Royal Street CSOs to show that with refinement and improvement upon the nine minimum controls program already in place; it can continue to meet Water Quality Standards and enhance protection of designated uses of the receiving waters.

DEQ requires additional information on Hooffs Run in-stream conditions during wet weather events to complete their evaluation of the impacts from CSOs 003 and 004 on Hooffs Run. Therefore, alternatives for the CSOs discharging to Hooffs Run will be developed after the City completes an in-stream monitoring program and DEQ completes an analysis of the data collected.

2. Definition of Water Quality and CSO Control Goals

Based on the discussion above, the City of Alexandria's Water Quality and CSO Control Goals are as follows:

-
- ¹
- Program Review Document No. 1, Chapter III "Basic Data", March 1993
 - Program Review Document No. 2, Chapter IV "Flow Monitoring and Sampling Program", March 1993
 - Program Review Document No. 3, Chapter V "Assessment of Existing Combined Sewer Overflow Impacts", March 1994

- Alexandria CSO pollutant loads will continue to not preclude the attainment of Water Quality Standards or the receiving waters' designated uses or contribute to their impairment.
- Improve the existing nine minimum control program.

B. SCREENING OF PRELIMINARY ALTERNATIVES

1. Source Control

The City of Alexandria has already in effect a wide range of source control measures. These measures are as follows:

- Street sweeping
- Street Flushing (spray cleaning)
- Catch Basin cleaning
- Household Hazardous Waste Recycling Program
- Waste Oil and Antifreeze Recycling Referral Service
- Solid Waste Recycling Program
- Leaf Collection and Composting Program
- Conveniently placed waste disposal containers
- Pretreatment Program administered by Alexandria Sanitation Authority (ASA)
- Source Control Program for Auto Related Businesses based on Nationally recognized program developed in Santa Clara, CA
- Public Education materials

Additional source control alternatives to be considered are:

- Expanded Public Education Programs and
- Water Conservation

The City presently distributes public education materials on pollution prevention to new homeowner's associations. An expanded public education program, targeting a larger portion of the population, has the potential to decrease litter and increase public participation in existing source control measures such as household hazardous waste recycling. Therefore, this alternative merits further investigation.

Water conservation would reduce the dry weather sanitary flow. Dry weather flows are a small portion of the combined sewer flow causing overflows in Alexandria and therefore the effect of this activity would be of limited benefit during CSO occurrences. Moreover, it would decrease the velocity of flow in the Potomac Interceptor during dry weather, which is already sluggish, and possibly increase sediment deposition. Therefore, water conservation is not a viable alternative.

2. Collection System Controls

The City has already implemented extensive collection system controls into its existing CSO management program which are as follows:

- Infiltration/Inflow Control
 - Pendleton Street Tidegates were repaired to reduce inflow

- Rehabilitation of sewers using Insituform and other trenchless technologies
- Static Flow Control/In-line Storage
 - Installation of a 12" weir at the entrance to the 27" diameter Hooffs Run CSO outfall to reduce overflow occurrences
- Sewer Line Flushing
- Ongoing Program of Maintenance and Inspection
- Floatables Control
 - Hooded Catch Basin Outlets as shown in Figure VI-2
 - Static Screen at Royal Street CSO as shown in Figure VI-3

An additional collection system control alternative to be considered for floatables control is:

- Advanced Inspection of the CSS (targeting high litter areas)

3. Receiving Water Control Measures

The City operates a Riverfront Clean Up Program during the months of April through early October. A maintenance crew combs the shoreline by foot and by boat removing debris and floatable materials. Based on discussions with City personnel, it is estimated that substantial quantities of floatables and debris are collected as a result of this program. These materials are transported to the Alexandria/Arlington County Cogeneration Facility. This includes floatables that may originate from the Pendleton Street CSO in addition to debris from other sources. Figure VI-3 shows the reach of shoreline included in this program.

4. Selection of Control Measures

Based on the preliminary screening review, which is summarized in Table VI-1; an expanded public education program and advanced inspection of the CSS are selected for further investigation.

In addition, the City proposes to carry out an in-depth review of its current source and collection system controls to look for possible areas of improvement in frequency, methods, implementation, and documentation.

C. FINAL ALTERNATIVES DEVELOPMENT

1. Expanded Public Education Program

The City will investigate enhancement of the existing public outreach effort to raise community awareness of and participation in its pollution prevention/source control programs. This effort could include development of education programs and informational brochures.

2. Advanced CSS Inspection

The City will investigate developing an inspection program targeting areas in the CSS near fast food establishments and convenience stores. If significant problem areas are identified, preventive measures such as inlet screens and hooded catch basin outlets can be implemented to improve source control. The public education program could also target these areas to increase public awareness.

3. Review of Existing Control Measures

The City proposes to perform an in-depth review of existing control measures. This review would evaluate the frequency, methods, coordination, implementation, and documentation of each control measure and recommend improvements based on the review findings.

D. SUMMARY

The City of Alexandria has implemented a comprehensive set of CSO Control Measures. The characterization, monitoring and modeling programs previously carried out by the City indicate that its existing nine minimum control program effectively controls CSO pollutants loads to the Pendleton Street and Royal Street CSO outfalls. Therefore, the City proposes to build upon this program's success by reviewing for possible incorporation, the following final alternatives:

- Expanded Public Education Program
- Advanced Combined Sewer System Inspection, and
- Review of Existing Control Measures.

The City will present these alternatives in a public meeting to receive public input and then proceed with a detailed investigation.

E. REFERENCES

U.S. Environmental Protection Agency (USEPA), 1994. "Combined Sewer Overflow (CSO) Control Policy", Washington, D.C.

U.S. Environmental Protection Agency (USEPA), 1995. "Combined Sewer Overflows: Guidance for Nine Minimum Controls", Washington, D.C.

U.S. Environmental Protection Agency (USEPA), 1995. "Combined Sewer Overflows: Guidance for Long-Term Control Plan", Washington, D.C.

Virginia Department of Environmental Quality (DEQ), 1995. "Alexandria Combined Sewer System VPDES Permit No. VA0087068", Woodbridge, VA.

City of Alexandria
Transportation and Environmental Services

PROGRAM REVIEW DOCUMENT NO. 4
Chapter VI of Alexandria CSO Study Final Report
"Development of Preliminary Alternatives and
Selection of Final Alternatives"

TABLE VI-1

Summary of Existing Nine Minimum Control Measures

MINIMUM CONTROL	CONTROL MEASURES IMPLEMENTED
Proper Operation and Maintenance	<ul style="list-style-type: none"> • Established maintenance program for regulators • Repaired Pendleton Street tidegate • Inspection program for CSS • Sewer line flushing
Maximum Use of Collection System for Storage	<ul style="list-style-type: none"> • Repaired Pendleton Street tidegate • Installed 12" weir at Hooffs Run CSO outfall • Installation of Insituform to reduce inflow/ infiltration
Review and Modify Pre-treatment Requirements	<ul style="list-style-type: none"> • ASA administered Pretreatment Program • Source Control Program for Auto related Businesses
Maximum Flow to the POTW for Treatment	<ul style="list-style-type: none"> • Analyzed sewer system • ASA carrying out activities related to POTW
Eliminate Dry Weather Overflows	<ul style="list-style-type: none"> • Perform routine inspections • Clean and repair CSS on regular basis
Control of Solid and Floatable Materials in CSOs	<ul style="list-style-type: none"> • Static screen at Royal Street CSO outfall • Hooded catch basins and catch basin cleaning • Street sweeping and flushing • Solid waste collection and recycling • Leaf collection and composting • Skimming of floatables along riverfront by boat
Pollution Prevention	<ul style="list-style-type: none"> • Household Hazardous Waste Recycling Program • Waste Oil and Antifreeze Referral Service
Public Notification	<ul style="list-style-type: none"> • Signs are in the process of being made to post at all outfalls
Monitoring	<ul style="list-style-type: none"> • Monitoring efforts completed for Royal Street and Pendleton CSO outfalls • Additional monitoring on water quality of Hooffs Run being carried out

City of Alexandria
Transportation and Environmental Services

PROGRAM REVIEW DOCUMENT NO. 4
Chapter VI of Alexandria CSO Study Final Report
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TABLE VI-2



CSO Control Technologies Screening Summary

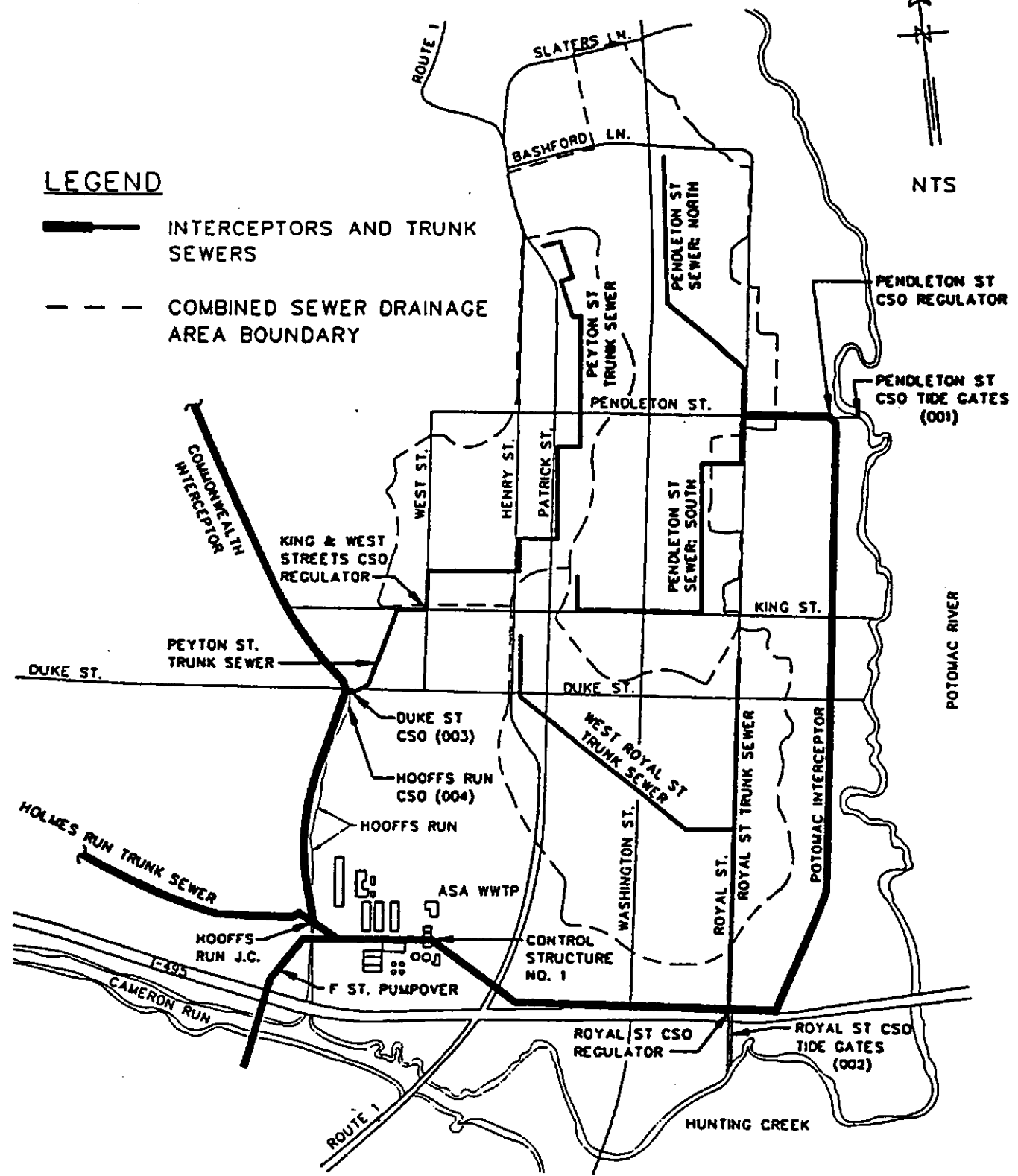
CSO CONTROL TECHNOLOGY	ALREADY INPLACE/REVIEW FOR IMPROVEMENT	CONSIDER FOR USE	ELIMINATE FROM FURTHER CONSIDERATION
SOURCE CONTROLS			
Expanded Public Education Program		X	
Street Sweeping	X		
Street Flushing (spray cleaning)	X		
Catch Basin Cleaning	X		
Leaf Collection	X		
Household Hazardous Waste Recycling	X		
Waste Oil and Antifreeze Recycling	X		
Auto Related Business Source Control Program	X		
Water Conservation			X
COLLECTION SYSTEM CONTROLS			
Sewer Flushing	X		
Advanced System Inspection		X	
Static Flow Control/In-line Storage	X		
Infiltration/Inflow Reduction	X		
Ongoing Program of Maintenance and Inspection	X		
FLOATABLES CONTROL			
Hooded Catch Basin Outlets	X		
Static Screen	X		
Riverfront Clean Up Program	X		

FIGURE VI-1

ALEXANDRIA COMBINED TRUNK SEWERS AND INTERCEPTORS

LEGEND

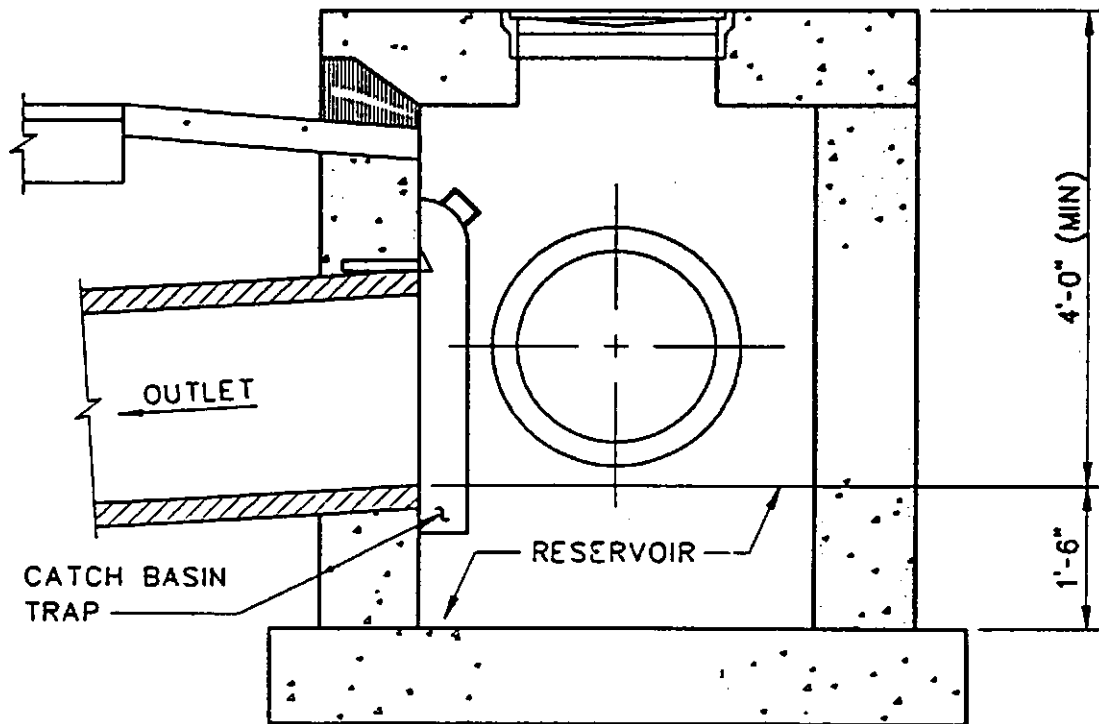
-  INTERCEPTORS AND TRUNK SEWERS
-  COMBINED SEWER DRAINAGE AREA BOUNDARY



CITY OF ALEXANDRIA
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COMBINED SEWER OVERFLOW STUDY
FINAL REPORT

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FILE: IV00GRA3 SCALE: 1:11 09/12, 1995 at 11:24 R11 C2



HOODED CATCH BASIN
NOT TO SCALE

NOTE:
CITY OF ALEXANDRIA STANDARD DETAIL.

FILE: CAGVI-2 SCALE: 1:241 09/15, 1995 at 15:52 •R11 c2•

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CONTROL OF SOLID AND FLOATABLE MATERIALS FROM CSO's

